CLAIMS

1. A method for carrying out circuit simulation, including the steps of:

extracting a plurality of partial circuits to be inspected for equivalence in order to check if they exhibit equivalent operational characteristics, from a circuit that is an object of circuit simulation;

assessing the intensity of influence of an external circuit of said circuit, by tracing paths linking said external terminal and given terminals of said plurality of partial circuits;

inspecting said plurality of partial circuits for equivalence in order to detect partial circuits exhibiting equivalent operational characteristics, based on the configurations of said plurality of partial circuits, the connectional relationships of at least ones of the corresponding input terminals and output terminals of said plurality of partial circuits, the operational characteristics of corresponding component elements of said plurality of partial circuits, and the intensity of the influence of said external terminal; and

carrying out circuit simulation after said circuit is compressed by integrating said partial circuits exhibiting equivalent operational characteristics into one circuit.

2. A method for carrying out circuit simulation according to claim 1 wherein, when said circuit is a MOS circuit including a plurality of MOS semiconductor devices, the frequency of shifting from the source or drain of a MOS semiconductor device to the gate thereof while tracing a path linking said external terminal and a given terminal of each of said plurality of partial circuits is assessed as the intensity of influence of said external terminal.

3. A method for carrying out circuit simulation according to claim 1 wherein, when the connectional

relationships of at least ones of the corresponding input terminals and output terminals of said plurality of partial circuits to be inspected for equivalence are judged to be mutually inconsistent, a plurality of other partial circuits connected to at least ones of said input terminals and output terminals are inspected for quasi-equivalence; and when said plurality of other partial circuits are judged as quasi-equivalent circuits, said plurality of partial circuits to be inspected for equivalence are regarded to exhibit equivalent operational characteristics.

4. A method for carrying out circuit simulation according to claim 1 wherein, when a plurality of partial circuits are inspected for equivalence, a unique element having no counterpart within said circuit is detected; if a terminal that has not been judged as a unique terminal having no counterpart is included in terminals connected to said unique element, said terminal is newly judged as a unique terminal; and said plurality of partial circuits connected to said newly judged unique terminal are inspected for equivalence.

5. An apparatus for carrying out circuit simulation, comprising:

a circuit extracting unit for extracting a plurality of partial circuits, which will be inspected for equivalence in order to check if they exhibit equivalent operational characteristics, from a circuit that is an object of circuit simulation;

a storage unit for holding data concerning the configurations of said plurality of partial circuits, the connectional relationships of at least ones of the corresponding input terminals and output terminals of said plurality of partial circuits, and the operational characteristics of corresponding component elements of said plurality of partial circuits;

an assessing unit for assessing the intensify of the influence of an external terminal of

said circuit, by tracing paths linking said external terminal and given terminals of said plurality of partial circuits; and

a circuit-equivalence inspecting circuit for detecting partial circuits exhibiting equivalent operational characteristics by inspecting said plurality of partial circuits for equivalence, on the basis of the results of assessment concerning the intensity of influence of said external terminal provided by said assessing unit, and said data held by said storage unit,

wherein, after said circuit is compressed by integrating said partial circuits exhibiting equivalent operational characteristics into one circuit, circuit simulation is carried out.

6. An apparatus for carrying out circuit simulation according to claim 5 wherein, when said circuit is a MOS circuit including a plurality of MOS semiconductor devices, said assessing unit assesses, as the intensity of the influence of said external terminal, the frequency of shifting from the source or drain of a MOS semiconductor device to the gate thereof while tracing a path linking said external terminal and a given terminal of each of said plurality of partial circuits.

7. An apparatus for carrying out circuit simulation according to claim 5, further comprising a connected-circuit quasi-equivalence inspecting unit for, when said circuit-equivalence inspecting circuit judges that the connectional relationships of at least ones of the corresponding input terminals and output terminals of said plurality of partial circuits to be inspected for equivalence are mutually inconsistent, inspecting a plurality of other partial circuits connected to at least ones of said input terminals and output terminals for quasi-equivalence,

wherein when said connected-circuit quasi-equivalence inspecting unit judges that said plurality of other partial circuits are quasi-equivalent

circuits, said plurality of partial circuits to be inspected for equivalence are regarded to exhibit equivalent operational characteristics.

8. An apparatus for carrying out circuit simulation according to claim 5 wherein, when said circuit-equivalence inspecting circuit inspects a plurality of partial circuits for equivalence, it detects a unique element having no counterpart within said circuit; when a terminal that has not been judged as a unique terminal having no counterpart is included in terminals connected to said unique element, said terminal is newly judged as a unique terminal; and said plurality of partial circuits connected to said newly judged unique terminal are inspected for equivalence.

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